

REMARKS

Claims 1-6, 10, 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanabe et al. (U.S. Patent No. 6,893,971). The Examiner states:

Tanabe discloses a dry etching method of an InP-based compound. The method comprises the steps of:
forming a mask on the InP -based substrate /III-V based compound (col. 6 lines 1-4)
placing the InP substrate and the mask into a reactor having a pressure of 0.5 Pa/3.7 mTorr (which overlaps the claimed range between 2 mTorr to about 20 mTorr) (col. 8 lines 18-20) n
introducing a first gas of HI/a gas chosen from group VII gaseous species into the reactor (col. 7, lines 38-40)
introducing a second gas of BCl₃ into the reactor (col. 7, lines 36-37)
exposing the InP substrate/the III-V based compound to a gas plasma comprises HI and BCl₃ for deep via holes having a sidewalls etching fabrication and then make it possible to control fabrication into a desired shape (col. 9, lines 45-65), which reads on exposing the InP substrate/the III-V based compound to a gas plasma comprises the first and second gas to etch smooth high aspect ratio sidewalls.

Applicants respectfully traverse the rejection. Claim 1 recites in part "exposing said III-V based compound to a gas plasma comprising said first, and said second gas to etch smooth high aspect ratio sidewalls" (emphasis added). Applicants respect fully point out that Tanabe et al. disclose "make it possible to control fabrication shape into a desired shape" (col. 9, lines 49-50). However, the concept of "smooth sidewalls" are nowhere mentioned by Tanabe et al. Indeed, FIGs. 7b, 9a, 9b, 10a, 10b, 10c and 10d show a lateral roughness is present in contrast to the "smooth high aspect ratio sidewalls" of the present invention (see FIGs. 4a-4b of applicants' specification). Hence, Tanabe et al do not disclose, suggest or teach the ability to make smooth sidewalls. Therefore, Claim 1 is not anticipated by Tanabe et al. and is allowable over Tanabe et al. Claim 19 is similar to Claim 1 and is allowable for the same reasons as Claim 1. Claims 2-6 and 10 depend from Claim 1 and are allowable for at least the same reasons as Claim 1.

Claims 11-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Tanabe et al (U.S. Patent No. 6,893,971). Applicants respectfully traverse the rejection. Claim 11 recites in part "exposing said III-V based compound to a gas plasma comprising said first,

and said second gas to etch smooth high aspect ratio sidewalls" (emphasis added). Applicants respectfully point out that Tanabe et al. disclose "make it possible to control fabrication shape into a desired shape" (col. 9, lines 49-50). However, the concept of "smooth sidewalls" are nowhere mentioned by Tanabe et al. Indeed, FIGs. 7b, 9a, 9b, 10a, 10b, 10c and 10d show that substantial lateral roughness is present in contrast to the "smooth high aspect ratio sidewalls" of the present invention (see FIGs. 4a-4b of applicants' specification). Hence, Tanabe et al do not disclose, suggest or teach the ability to make smooth sidewalls. Therefore, Claim 11 is not anticipated by Tanabe et al. and is allowable over Tanabe et al. Claims 12-16 depend from Claim 11 and are allowable for at least the same reasons as Claim 11.

Claims 7-9, 17-18 and 20-21 are rejected under 35 U.S.C. under 103(a) as being unpatentable over Tanabe et al. (U.S. Patent No. 6,889,971) in view of Bhardwaj et al. (U.S. Patent No. 6,261,962). The Examiner states "Tanabe fails to disclose the specific concentrations/ratio of BCl_3 , CH_4 and H_2 although Tanabe discloses the flow rate of the mixed gas can be adjusted (col. 10, lines 50-53). The Examiner then introduces Bhardwaj for the proposition that "gas flow rate is a result effective variable" and points to In Re Boesch 617 F2d 272 (CCPA 1980) for the holding that discovering an optimum value of a result effective variable involves routine skill in the art.

Applicants respectfully traverse the rejection. The Applicants respectfully point out that In Re Boesch states "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art" (emphasis added). First, it is clear that Tanabe et al. are unaware of the criticality of BCl_3 as recited in the present invention. Rather, Tanabe et al. suggest: "a gas that is selected from a group consisting of inert gas, gas containing Cl_2 , gas containing BCl_3 , gas containing HBr , and gas containing HCl , with this selected gas being added to hydrogen iodide" (col. 2, lines 59-60). Indeed, Tanabe et al. appear to BCl_3 equate with an inert gas. FIG. 2 of the instant application shows the criticality of using BCl_3 and the percentage of the BCl_3 content required for reducing the propagation loss (directly related to sidewall smoothness). It is clear from the discussion above that Tanabe et al. do not disclose a process to improve sidewall smoothness. Hence, the claimed process is not a known process to improve sidewall smoothness and In re Boesch is not applicable. Second, Bhardwaj does not

teach, suggest or disclose anything relating to the importance of BCl_3 for sidewall smoothness. Hence, Claims 7-9, 17-18 and 20-21 are patentable over over Tanabe et al. (U.S. Patent No. 6,8893,971) in view of Bhardwaj et al. (U.S. Patent No. 6,261,962).

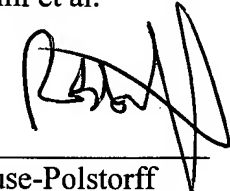
Therefore Claims 1-21 are allowable and allowance is respectfully requested.

Should the Examiner wish to discuss any aspect of the application he is invited to telephone the undersigned at (650) 485-5904.

Respectfully submitted,

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